

INDIVIDUAL LEARNING NEEDS

7 INSTRUCTOR TRAINING

Department of Education
Office of Vocational and Adult Education

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LEARNER NEEDS

Instructor Training Module #7

Sally H. Spetz

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1. *Assess needs or assessment* The process of identifying individual characteristics of apprentices in the learning process. Example characteristics include abilities, work habits, career goals, motivation, and performance.
2. *Assessment strategies* Ways to collect assessment information, for example, analyzing apprentices' work, discussion or interview, and observation.
3. *Competence* Possession of a skill or knowledge at a level required to successfully complete a task.
4. *Individualized instruction* Varying teaching methods to be consistent with individual needs, in order to maximize the apprentices' benefits from instruction.
5. *Individual related instruction plan* A plan which supplements a Plan for Instruction by providing for individual apprentice needs, interests and abilities. It includes performance levels, performance objectives, activities, responsibility assignments and schedules for activity completion for individuals or groups of apprentices.
6. *Performance achievement test* A test which measures what a learner actually knows and how well they can demonstrate the knowledge and skill.
7. *Standardized test* A test which measures a learner's aptitude or achievement by comparing his or her performance with that of a large group of similar individuals.
8. *Varying instruction* The means by which instruction is individualized. Aspects of instruction that can be varied include pace, content, level of difficulty and form of presentation.

related subjects instruction is an essential part of every apprenticeship program. It is the program component through which apprentices are taught the background and range of applications of associated technical subjects such as mathematics, science and safety. Related instruction usually takes place in a classroom, after the on-the-job work is over. Most frequently, related instruction is given by a skilled tradesperson or craftworker. For the person or craftworker to be an effective trainer, he or she must not only know their trade skills, but also they must use teaching skills appropriate for conveying that information to apprentices. This series of materials is designed to train related subjects instructors in the critical teaching skills necessary to perform their jobs effectively. The titles of the booklets in the series are:

Introduction to Related Subjects Instruction and In-service Training Materials
Planning the Apprenticeship Program
Planning Related Subjects Instruction
Developing Instructional Materials for Apprentices
Presenting Information to Apprentices
Directing Learning Activities for Instruction
Providing for Individual Learner Needs
Controlling Instructional Settings
Evaluating Apprentice Performance
Communicating with Apprentices

The first booklet introduces the series, describes the content of each booklet, and provides an overview of apprenticeship and of adult learners. The second booklet describes how to plan an apprenticeship program and may be used by related instructors, sponsors or service agencies. Each of the other eight booklets deals with a set of teaching skills judged by a panel of experts on apprenticeship to be critical to working effectively as a related subjects instructor.

What Is This Booklet About?

Each apprentice has different needs, interests and

might do better by viewing a film. Most apprentices learn best through instruction that is tied into particular trades. For example, concepts of the mechanical advantage of levers are best taught through film and illustrations. This could mean a pair of pliers for an electrician apprentice or a drill press for the machinist trades.

It is important for you as a related instructor to be sensitive to these differences. Also, you must take these differences into account in planning and providing instruction. By providing for individual needs, interests and abilities, your instruction will be more responsive and more effective. This booklet is about the three major ways you need to provide individualized instruction:

1. Determine needs, interests and abilities of each apprentice;
2. Develop individual apprentice related instructional plans; and
3. Use principles of individual differences in the instructional process.

What Must I Do To Complete My Work In This Booklet?

Working your way through this booklet will require you to read the text, to answer the questions, to perform the exercises, and to complete the pre- and post-assessment instruments. Expect to spend about five hours working through the materials. The only resources you need to complete your work in this booklet are: (1) a copy of this booklet; (2) a pencil or pen; (3) about two hours of quiet time; and (4) recollection of past related instruction experiences.

The materials are written in a self-instructional programmed format. You may work through the text, exercises and questions at your own pace and leisure; you do not complete your work in the booklet at one sitting.

Each chapter in the booklet is devoted to a single topic. The general format of the chapters is similar, with the following parts:

1. An *introduction* describing the skill and the

posttest.

Your activities in working through this booklet will include, in order, the following:

- Complete the self-assessment;
- Read and consider in detail the introduction and objectives for each skill;
- Read and study the text, examples and illustrations provided for each skill;
- Complete the self-test exercise for each chapter and compare your answers with those provided in the Appendix;
- If you complete the exercise as directed, continue your work in the booklet; if you fail to answer the questions correctly, repeat your work in the chapter under consideration; and
- At the conclusion of the booklet, complete the posttest for the unit. Check your answers against those provided. If you exceed the criteria, continue your work in the next booklet; if you fail to demonstrate mastery, repeat portions of this booklet as needed.

petency areas associated with apprentice needs. Read each competency in Figure 1 and assess your level of skill in performing the task. The number that best describes your level of skill in performing the task means what you know about the task and your experience in successfully performing the task. The number that best describes the number that best describes the task and skill. Competencies where you are not competent are those that you should concentrate attention to the chapters where you are not competent.

ies of each entice.	2. Assess apprentice needs using existing records.	Knowledge Skill	1 1	2 2	3 3
	3. Assess apprentice needs using test results.	Knowledge Skill	1 1	2 2	3 3
	4. Assess needs through discussions with apprentices, instructors, job supervisors, and others.	Knowledge Skill	1 1	2 2	3 3
	5. Assess needs by direct observation of apprentice.	Knowledge Skill	1 1	2 2	3 3
velop individual ed subjects uction plans.	6. Determine specific areas of learner strengths and limitations.	Knowledge Skill	1 1	2 2	3 3
	7. Identify apprentice instructional needs.	Knowledge Skill	1 1	2 2	3 3
	8. Formulate individual related subjects instruction plan.	Knowledge Skill	1 1	2 2	3 3
principles of ividual differences e learning ess.	9. Vary aspects of instruction based on individual differences.	Knowledge Skill	1 1	2 2	3 3
	10. Select appropriate instructional methods for individualizing instruction.	Knowledge Skill	1 1	2 2	3 3

Introduction and Objectives

Apprentices differ in the abilities, interests and experiences that they bring to a training setting. They also differ in the ways they respond to training. An important part of the related subjects instructor's job is to identify these individual differences and design instruction so that training is effective for each apprentice.

This identification of individual needs is called assessment. Assessment could involve your talking with a job supervisor to determine the apprentice's year of training, particular strengths and limitations, and special interests. It could also involve your reviewing the apprenticeship application file or discussing with the apprentices their educational background, progress to date and career aspirations.

Assessment is an on-going process — each apprentice's interests and needs change over time. Throughout an apprentice's apprenticeship, you may need to use various assessment strategies to keep in tune with the trainees' changing needs — those that are unique to a single trainee and those that are shared with other apprentices. As you work through the materials in this unit you will learn about individual assessment. After completing the unit you will be able to:

1. Identify the decisions you can use assessment information to make;
2. Select appropriate procedures for determining needs, interests and abilities of apprentices; and

3. Apply these procedures in your related subject instruction.

What Is Assessment?

Assessment is the determination of individual abilities, interests, abilities and needs. It involves the collection of information from various sources about different characteristics of apprentices that may affect learning. Assessment provides a basis for making instructional decisions about placement of apprentices in a related instructional program, sequencing and pacing instructional activities and identifying special supportive services.

The type of decisions you need to make determine the types of information which you as a related instructor need to collect. Comprehensive assessment information includes an apprentice's work experience; levels of achievement in various related subject areas; specific interests and aspirations; and physical, mental and emotional strengths and limitations. Other types of information you might collect are shown in Figure 2. The specific information to include in an assessment depends upon the goals of the related subjects instructional program as well as the instructional goals. The greater the amount of information collected, the more complete the picture of the apprentice and the more satisfactory the plan for the apprentice's instructional program.

WORK HABITS	Attendance	Promptness	Interpersonal Relations	Appearance	Initiative	Need for Supervision
EMPLOYMENT HISTORY	Jobs Held		Length of Employment		Types of Job Duties	Current Job Requirements
ACHIEVEMENT	Academic Performance		Job Performance		Competencies	

relating the overall instructional content to job requirements of specific trades.

Relating daily instruction to the apprentice's current on-the-job learning situation.

Adapting instructional methods and materials to suit the individual learning characteristics of each apprentice.

How to capitalize on the strengths of individual apprentices.

Which areas need strengthening or supportive services for success.

Which areas of instruction are consistent with specific apprentice interests.

Identifying instructional sequences which are challenging but not so difficult that an apprentice is frustrated.

The instructional design considerations are particularly important in apprenticeship related subjects instruction because apprentices have diverse backgrounds, interests, abilities and instructional needs. A single apprentice group could contain individuals with backgrounds ranging from those who have not completed high school to those with college degrees. Individuals in the group may be serving apprenticeships in training for vastly different occupations, such as automotive mechanic, tool maker, electrician and plumber. The instructional needs of the individual apprentices will vary substantially in terms of content, length and the ways instruction is provided.

Identifying individual apprentice needs, abilities and

background, experiences and levels of abilities provides some direction to your instructional planning. Using this information as a baseline, assessments throughout the course chart an apprentice's progress and growth in specific areas. You can use this information to adapt instruction to be in line with the trainees' progress and their experiences outside related instruction.

There are different ways to assess trainee needs. Several step procedures for conducting an assessment and synthesizing the results follow.

Step 1: Develop and Administer Apprentice Intake

First, gather basic information from the apprentices themselves. At the start of a formal course or as apprentices enter a more unstructured training situation, conduct an administering an apprentice intake form. This is a simple and easy way to collect general assessment data for making instructional decisions. A sample intake form is provided in Figure 3. Modify the form based on your situation and goals. For example, if your related instruction program is sponsored by a corporation, do not include the "previous employment" item. Also, add items you consider important. For example, subjects taken in school or list previous job activities and responsibilities may be included, if they are not available to you from other records.

Keep these intake cards or forms in the individual apprentice's file. Supplement or update the information using procedures described in the following steps.

Name: _____
Home Address: _____
Phone No.: _____
School Attended: _____
Highest Grade Completed: _____
Date of Employment: _____
Employment Address: _____
Occupation: _____
Supervisor: _____
Length of time you have been an apprentice _____ years _____ months
Special interests and hobbies: _____

Step 2: Determine Appropriate Assessment Strategies

The Apprentice Intake Form is useful for making initial, diagnostic and programmatic decisions. Sometimes it is necessary to collect more detailed information and to update apprentice characteristics and needs. Four strategies are available to supplement the intake information:

- Use of *existing records* — apprentice application records, course transcripts, counseling results, standardized test scores, attendance records, and so forth.
- *Tests* of apprentice knowledge, attitudes and performance.

task. If both methods yield the information you need, use the easier method. Also, consider what type of information you need to make an instructional decision. For example, if you need to know which apprentices have had training in applying the Pythagorean theorem, you could review records or simply ask them. Step 3, which explains assessment techniques, will also help you select appropriate strategies.

Step 3: Conduct Periodic Assessments

Both formal and informal assessments should be conducted throughout related subjects instruction. In

determining the abilities and other characteristics of apprentices when they start a course of study; assessing apprentices' progress in the instructional program; and verifying assessment information obtained through other means.

When an apprentice enters an instructional program it is useful to review available records, such as the application, educational records and job performance records. This is useful for identifying individual strengths and weaknesses and any problems the apprentice has encountered in related subjects instruction or on the job. Solutions to previous problems and effective instructional strategies may be identified or deduced from the

use of job performance reports, if available from the apprentice's on-the-job supervisor, to assess the apprentice's progress. These reports will show how well the apprentice applies principles and concepts learned during related subjects instruction. An apprentice doing well in related subjects instruction but not applying what is learned on the job may indicate that there may be a problem with the instruction. The instructor may need to renew efforts and possibly use different instructional strategies to carry the related subjects instruction program over to their use on the job.

Additionally, records may be used to confirm or provide additional information regarding assessment results. For example, an apprentice may be late consistently for a related subjects instruction night class. On reviewing the apprentice's record, you discover that she has two pre-school absences. You find out further from the apprentice that the apprentice is required to drive from her job to a day-care facility, to the class site makes it impossible to be on time. Being a considerate and resourceful instructor, you take steps to accommodate this apprentice's individual needs.

An instructor can obtain a great deal of background information from various records. Some of the information you can gather is listed in Table 1, though this will depend on your specific instructional program. You should realize in using this information that

Job Records

Address
Family Status
Age
Employment History
Performance Records

Educational Records

Address
Family status/background
Age
Courses and grades
Honors received
Attendance
Disciplinary Actions
Instructors Reports
Guidance and Counseling
Reports
Special Services
Medical History
Standardized Test

- Interest Inventories
- IQ
- Aptitude Tests
- Achievement Tests
- Psychological

Testing

Instructor-prepared tests and standardized tests are commonly used to collect assessment information in related subjects instruction. Pre-tests may be used to assess character traits of apprentices initially and to serve as a baseline against which to gauge trainee progress. Performance achievement tests assess progress of apprentices. They also can be used to verify or reinforce other information. Final performance achievement tests can be used to determine the final levels of competence acquired by apprentices. Standardized tests may be used on occasion for assessment purposes, except they are often too general to describe the specific acquired competencies of apprentices.

Assessment information may be collected using a work sample test, a simulation test, a knowledge test, an attitude scale. The work sample test requires an apprentice to demonstrate competence on a sample set of tasks. A simulation test replicates some critical elements

cate how well apprentices' attitudes are consistent with those attitudes desirable on the job. For example, you assess safety consciousness, pride in work, attitudes toward co-workers, and other similar characteristics with attitude scales and confirm the results by observing apprentices on the job.

Specific procedures for planning, developing and interviewing tests are described in the module, *Evaluating Apprentice Learning*. These procedures can be used by the related subjects instructor to gather the following types of assessment information:

- Achievement
- Learning Characteristics
- Special Needs
- Interests
- Attitudes and Traits

Discussion

A direct means of obtaining certain types of assessment information is through discussion or interview. Because it is such a flexible technique, you can use it for many of your information needs. Individuals who potentially can provide useful information include:

- the apprentice
- other instructors
- job supervisor
- union representative
- counselor

The discussion can be informal or structured by an interview guide. The types of information you want will help you prepare an interview guide or a set of general questions to guide you in an unstructured discussion. As an example, suppose you teach in a secondary or post-secondary related subjects program and you suspect that an apprentice in your related subjects group has some type

of reading and writing requirements. A meeting with a school counselor or reading specialist may be necessary to help you diagnose the problem. Some questions you might write down prior to the interviews are the following:

Job Supervisor:

1. What are the job-related reading/writing requirements of the apprentice? (Here it would be a good idea to have a checklist to go over with the supervisor. It could include various types of materials: forms, directions, manuals, letters, etc. -- and the level of difficulty.)
2. What types of reading and writing tasks has he been involved in up to this point? What areas will he move into next? What are some examples of materials he reads and/or writes?
3. Has he had any problems in this area before? How do these problems affect his overall job performance?

Counselor:

1. Have you ever had a conference with John? At his request?
2. Is there any evidence that he has some type of reading problem or learning disability? Any previous problems which would cause this? Physical problems?
3. Has he had any special services to help him with his difficulty? How successful were they?
4. Would you advise further testing of the problem?
5. What type of remedial program or special assistance would you suggest for this course?

Interviews and discussions take considerable time but they provide in-depth and generally current information on an individual apprentice. Information which may be obtained from the various sources is presented in Table 2.

Assessment Information	Information Source				
	Apprentice	Counselor	Other Instructors	Job Supervisor	Union Representative
Family Background	X	X			
Medical History	X	X		X	
Employment History	X			X	X
Personality	X	X	X	X	
Interests	X	X	X	X	
Abilities					
Academic Performance		X	X		
Work Performance				X	X
Work Habits				X	X
Learning Characteristics		X	X		
Educational History	X	X	X		
Special Needs	X	X	X	X	X

Direct Observation

Fourth means of assessment, used primarily in assessing apprentice progress, is direct observation of the apprentice's performance. This type of assessment also can be

while the apprentice participates in a learning activity. Types of activities you might observe are (a) interacting constructively with other apprentices on performing a particular work task, (b) speed and accuracy of performance and (c) product quality.

Unstructured observation is an ongoing part of related subjects instructor's responsibilities. By observing apprentices at work on specific learning activities, you can identify problem areas and determine whether further assessment is required.

Observation is most useful for assessing the following characteristics of apprentices:

- Personality variables;
- Academic performance;
- Learning characteristics; and
- Special needs.

Step 4: Synthesize and Update Assessment Information

The final step is to assemble assessment information for use in individual and instructional planning. First, you need to summarize the variety of observations and findings for each apprentice. Do this by maintaining a record for each apprentice's file containing information from the original intake form and a summary of results of subsequent assessments. You could simply write findings into the intake form or devise a more comprehensive form for summarizing assessment data. An example form is presented in Figure 4.

Secondly, summarize the assessment information for all apprentices so that you can identify needs they have in common. This will guide you in designing group as well as individual instructional activities. A sample summary for the group is portrayed in Figure 5.

Occupation: _____

Year of Apprenticeship: 1 2 3 4 5

Total Length of Indenture _____ years _____ months

Areas of Specialty:

Educational History:

Highest Grade Completed _____

Academic Work Completed: _____

Related Subjects Work Completed:

Subject

Hours

Comments

Special Occupational Competency Requirements:

Promptness
Interpersonal Relations
Appearance
Grooming
Need for Supervision

Personal Characteristics:

Maturity
Self-confidence
Self-concept
Motivation
Attention Span
Learning Rate
Retention
Initiative
Adaptability

Performance:

	Rating	
<u>Job Competency</u>	<u>Satisfactory</u>	<u>Non-Satisfactory</u>

Special Needs/Notes:

Areas of Specialization

Year in
Apprenticeship

Number of
Trainees

Achievement Summary:

A. Satisfactory Performance Area
(Include skills, knowledges, attitudes)

Number of
Trainees

B. Non-Satisfactory Performance Area

ly. He thought the apprentices were fairly
ck review of the educational records he
nfirmed this.

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approaches were open to him. One was
g records and the other was to talk with the
supervisors. Since he had access to the
descriptions, Kazinski thought he would
. He found that their duties were atypical
st of the class, since they were employed
er than being in housing construction.
y that the instruction as well as much of
on was unrelated to the two apprentices'
e guessed that as a result course content
motivating. Kazinski confirmed this by
illy with the two apprentices. He incor-
ts of this assessment into the apprentices'
nstruction plans, as described in Chapter

2. For each of the following characteristics of apprentices, identify one or more assessment strategies for obtaining the information. Use numbers of strategies listed below in answering.

- | | |
|---------------------|-----------------------------|
| 1. Existing Records | _____ a. Job experience |
| 2. Tests | _____ b. Hearing problem |
| 3. Discussions | _____ c. Initiative |
| 4. Observation | _____ d. Mechanical ability |
| | _____ e. Promptness |
| | _____ f. Career goals |

3. For one or more of your apprentice related instruction students, try to obtain existing academic or job records. Complete as many portions of the sample assessment form (Figure 4) as you can with the information you have. Add topics to the form that you think are important for decisions you make. What other information do you think you need? How would you suggest collecting it?

Additional Information

ormation on assessing needs, you might
wing sources:

others. *A System for the Identification,
and Evaluation of the Special Needs
of Vocational Education*. Urbana-Cham-
bersity of Illinois, 1978.

W. C. Knaak. *Individualizing Vocational
ical Instruction*. Columbus, OH: Charles
ublishing Company, 1975.

Areas of Specialization

Year In
Apprenticeship

Number of
Trainees

Achievement Summary:

A. Satisfactory Performance Area
(Include skills, knowledges, attitudes)

Number of
Trainees

B. Non-Satisfactory Performance Area

group of twenty apprentices in the building trades. He completed introducing principles of matter and energy and administered a short test to assess the apprentices' comprehension of the concepts and information. In scoring the tests, Kazinski noted that two apprentices, one a pipefitter and one an electrician, did particularly poorly. He thought the apprentices were fairly bright and a quick review of the educational records he had compiled confirmed this.

So, what was the problem? Kazinski thought that it could be his teaching. But other trainees were doing fine so this was not likely. It could be personal problems. But he did not notice anything particularly wrong in observing the two at work. Maybe the instruction was not job-related.

Thus, Kazinski decided to find out more about the competencies required in the specific jobs held by the apprentices. Two approaches were open to him. One was to look at existing records and the other was to talk with the apprentices' job supervisors. Since he had access to the apprentices' job descriptions, Kazinski thought he would review them first. He found that their duties were atypical of those of the rest of the class, since they were employed in the industry rather than being in housing construction. Thus, it was likely that the instruction as well as much of the class discussion was unrelated to the two apprentices' situations. He guessed that as a result course content was not highly motivating. Kazinski confirmed this by talking individually with the two apprentices. He incorporated the results of this assessment into the apprentices' individualized instruction plans, as described in Chapter 4 of this booklet.

Additional Information

For further information on assessing needs, you might refer to the following sources:

Albright, and others. *A System for the Identification, Assessment and Evaluation of the Special Needs Learner in Vocational Education*. Urbana-Champaign: University of Illinois, 1978.

Bucal, and W. C. Kneale. *Individualizing Vocational*

separate work paper. Compare your answers to those provided in the appendix of the booklet.

1. List three instructional decisions you might make with assessment information.

2. For each of the following characteristics of apprentices, identify one or more assessment strategies for obtaining the information. Use numbers of strategies listed below in answering.

- | | |
|---------------------|----------------------------|
| 1. Existing Records | _____ a. Job experience |
| 2. Tests | _____ b. Hearing problems |
| 3. Discussions | _____ c. Initiative |
| 4. Observation | _____ d. Mechanical skills |
| | _____ e. Promptness |
| | _____ f. Career goals |

3. For one or more of your apprentice related instructional situations, try to obtain existing academic records. Complete as many portions of the self-assessment form (Figure 4) as you can with information you have. Add topics to the form that you think are important for decisions you make. What other information do you think you need? How would you suggest collecting it?

Introduction and Objectives

A related subjects instruction plan forms the link between the objectives of instruction, the identified needs, interests and abilities of apprentices and the provision of instruction to meet these needs. Essentially, the plan is a blueprint for individualized instruction, much as the Plan for Instruction developed in Module #3 provides a basis for group instruction. It is the responsibility of the related subjects instructor to develop apprentice related instruction plans from assessment data in order to incorporate principles of individual differences into the actual provision of instruction.

In this chapter, you will learn about planning for individual apprentice needs. Specifically, after completing this unit you will be able to:

1. Recognize the purpose of individual planning in apprenticeship related instruction; and
2. Develop related instruction plans for individuals and groups of individual apprentices.

The What And Why Of Individual Planning

Individual planning involves comparing an individual's present level of performance with an objective or target level of performance. Based on the difference between the two and characteristics of the apprentice, an individualized instructional sequence is developed. The individual plan supplements the Plan for Instruction by incorporating assessment information. The plan is an instructor's guide for helping the individual apprentice to complete instruction successfully.

Components of an individual related subjects instruction plan include the following:

- Overall related instruction objectives, apprenticeship related instruction standards, and job requirements for the instruction.

skills and attitudes) and other related characteristics. In this, you determine the instructional needs of (or groups of) apprentices. You then develop objectives for each unit and define a means for the achievement of the objectives.

By tying related instruction to both the needs of the apprentice and the needs of individual apprentices, the instructor is confident of meeting the requirements of the apprenticeship program as well as providing instruction that is meaningful to the apprentice. For example, an apprentice who is deficient in basic mathematical skills may benefit by more exposure to the required instruction in algebra. The apprentice needs remedial help to gain the competencies required for her job. Conversely, the related subjects instruction may not motivate the apprentice if the math skills. Thus, individual planning for different levels would provide for more challenging instruction sequences. Through individual planning, the instructor can adjust the pace and content of instruction and work with the apprentice to obtain the needed information. These aspects are described in the final chapter of this module.

How To Develop An Individual Plan

This section describes how to develop an individual apprentice related instruction plan. In developing the procedures, you will want to plan for the individual as far as possible. Remember that while it is important to plan for individual differences in providing instruction, you must capitalize on those things apprentices have in common when developing a plan. This is the first step in grouping apprentices in the first step.

Step 1: Group Apprentices

First, group apprentices based on their year of apprenticeship or prescribed curriculum.

apprentices with the same specialties. In this situation, first account for the different small groups and then account for individual differences within groups.

2: Compare Present Performance Program Objective

For each performance objective, compare the performance level of the groups with that of the objective. Note individual differences in performance within groups or individual problems and interests. The identified differences between present and target levels of performance will provide direction for the development of performance objectives and instructional activities.

3: Develop Performance Objectives

Next, develop, for each group, performance objectives for the apprentices to attain target levels of knowledge, skills, and attitudes. First, break down the program objective content into discrete units. For example, a program objective area dealing with preventive maintenance of tools might be broken down into the following tasks:

- Following manufacturers' instructions;
- Utilizing warranties;
- Maintaining service records;
- Cleaning and lubricating tools;
- Replacing worn out parts;
- Calling service personnel; and
- Developing pride in tools.

Each group's performance objective should be developed for each of these tasks. For example, an objective for the first task could read:

The apprentice will read and follow the manufacturer's instructions for maintaining an electric drill, circular saw and radial arm saw. The instructor will observe and assess performance.

Then, add individual performance objectives to account for individual interests, strengths and limitations. For

example, you could advance this apprentice to the next planned group unit of instruction, or develop objectives for the trainee to explore a related area of personal interest.

Step 4: Determine Instructional Activities

In this step, design instructional sequences for each performance objective. In many instances, the activities will follow directly from the performance objectives. For example, in the objective presented above, the apprentice would learn by doing, perhaps preceded by an instructor demonstration. Some guidelines for varying instructional activities based on individual learner needs are provided in the next chapter of this module.

Step 5: Develop Written Related Subjects Instruction Plans

Finally, incorporate the level of performance, objectives, activities, and other necessary items into a written plan. Develop a plan for each defined group of apprentices as well as for individual apprentices in those instances where they differ from the group.

A sample apprentice related subjects instruction plan is provided in Figure 6. It contains spaces where you can enter the apprentice's name and/or group, the program objective or content area addressed by the plan, the date you enter information, present level of performance (group or individual) from the assessment data, performance objectives you developed in Step 3, and activities you identified in Step 4. Also, you should include the persons responsible for the activities. Is the apprentice working alone? What are your responsibilities? Are additional outside resources required? Next, include the schedule for completion or evaluation of the activities. Finally, a space is provided for you to check off when the apprentice has successfully attained the performance objective.

You should update the individual and group plans with additional assessment information, either from a new assessment or evaluation, is obtained. Since entries are dated, the updated plan provides a continuous record of the apprentice's progress through the related instructional activities.

Group: _____

ent: _____

Level of Performance	Performance Objective	Activities	Persons Responsible	Schedule	Objectives Attained (%)

at Institute. Based on an assessment she performed at the start of a three-month training course offered for employees of local industries, Ms. Schmidt noted that there was a group of eight first-year cement mason apprentices in her class. Thus, she decided to use a group planning approach, supplemented with individualized planning, to cater to the individual needs of the cement mason apprentices. One month later she was planning a unit for the course on volume computations and applications. Her assessment data showed that the eight apprentices on the list had not yet been exposed to linear measurement and volume computation. The group plan she prepared for the program objective is presented in Figure 7. Assessment information also showed that individual mason apprentices were different. She developed and updated individual plans on those units where an individual's performance or interests differed substantially from those of the group. For example, Jessica Morgan had some trouble with basic multiplication. Before completing the volume unit, she required some assistance with multiplication. That month, Jessica was ahead of the group. Thus, Ms. Schmidt and Jessica together came up with an objective and activities which would be of mutual benefit. Figure 8 shows the individual plan for Jessica Morgan.

Additional Information

See the following for additional information on individual planning:

Wright, and others. *A System for the Identification, Assessment and Evaluation of the Special Needs Learner in Vocational Education*. Urbana-Champaign: University of Illinois, 1978.

separate work paper. Compare your answers with those provided in the appendix of the booklet.

1. Which of the following is *not* a purpose of an individual related subjects instruction plan?
 - a. A plan guides the instructor in providing instruction to individual needs.
 - b. A plan supplements a general plan for instruction.
 - c. A plan provides for more challenging instruction for advanced apprentices.
 - d. A plan serves as a basis for placing apprentices in instructional programs.
2. List the five components of an individual related subjects instruction plan.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
3. Using the assessment information you collected in part of Exercise 3 of the last chapter, generate an individual plan for a unit you plan to teach. Use the sample plans in Figures 6-8 as guides. To what extent is this apprentice's needs typical of all that you teach? How would you adapt the plan to suit other apprentices' needs, performance levels and interests?

Group: 1st yr cement masons

Project: Applications of volume computations to trades

Performance Objective	Performance Objective	Activities	Persons Responsible	Schedule	Observations
1. The apprentice will be able to identify linear measurement tools with 100% accuracy. 2. The apprentice will be able to read a linear scale to within 1mm. or $\frac{1}{16}$ "	Completion of instructional module on Basic Measurement: pp. 1-6 18-24	Group		By 10/15	
The apprentice will measure off the dimensions of an area for pouring a slab within $\frac{1}{8}$ "	On-the-job measurement, class simulation for practice.	Group Site supv. Instructor		By 10/15	
The apprentice will compute volumes, given dimensions or areas and heights, correctly at least 90% of the time.	Basic Measurement: pp. 30-34. Complete handout of word problems	Group		By 10/15	

ent: Volumes

el nce	Performance Objective	Activities	Persons Responsible	Schedule	Ob Att (
le c tion.	Will be able to multiply correctly 3-digit numbers 90% of the time.	1. Completion of Instructional Module on Basic Mathematics: pp. 8-11 2. Individual assistance, as required. 3. Complete handout of practice problems.	Morgan Instructor Morgan	By 10/11	
of	Will be able to explain to the group the relationship of weight, volume, density and temperature as it applies to mason's job.	1. Outside reading 2. Class presentation	Morgan Instructor provide references	By 10/29 unless volunteer speaker, then 11/4.	

Introduction And Objectives

Apprentice differences in backgrounds, abilities, skills, motivations and interests affect their abilities to benefit from various aspects of related subjects instruction. By using principles of individual differences and learning, you can capitalize on these differences and provide effective instruction for all.

It is your responsibility as a related subjects instructor to use assessment information to both plan for and provide instruction that is consistent with individual apprentice needs, interests and abilities. In this unit, guidelines are provided for varying instruction based on these differences. After reading through this chapter and completing the exercises, you will be able to:

1. Define individualized instruction;
2. Explain three ways of utilizing principles of individual differences in related subjects instruction;
3. Select appropriate ways of varying instruction to fit individual needs; and
4. Apply alternative approaches to individualizing instruction.

Characteristics Of Individualized Instruction

Individualizing instruction involves adapting the learning process to fit the assessed needs of individual learners. In apprentice related instruction this could involve designing unique instructional sequences for each individual. Or, it could mean adapting certain portions of instruction to suit the needs, interests and abilities of one or more apprentices. How much to vary instruction depends on the nature and extent of differences among individual apprentices.

In general, individualizing instruction involves varying certain aspects of the learning process and environment. Aspects of instruction that you should consider varying are:

Pace Of Instruction

Varying the pace of instruction allows apprentices to learn at their own rates or pace. Trainees learn at different rates or at their own pace depending on the required skills and knowledges. They continue to learn until they reach the standard for acceptable performance.

Consider using this strategy if apprentices differ in their learning characteristics (attention span, learning rate, retention) or abilities. Also, you can use this strategy if your apprentices differ in experience, with some having already learned the material. Varying the time for slower or less experienced apprentices to learn the material, without frustrating the faster or more experienced learners.

Content Of Instruction

This approach to individualization is based on the idea of varying what an apprentice learns to meet individual needs. You are limited in the amount of content you can vary since course objectives must be met. You should at least link the content to the objectives for apprentices. Do this through examples and exercises, tying them in to individual apprentice needs.

Also, look at courses apprentices have completed. This way you can identify topics they have already mastered and those they have not. Consider apprentices' achievement in various subject areas as the application of the subject areas to specific situations. Use information to individualize content. Exclude topics apprentices have already learned. Add new topics that have not been mastered.

Finally, content can be individualized by focusing on specific apprentice interests. Emphasize content that is of most interest to the apprentice. Use content of interest only until minimum competency is reached.

more difficult assignments so they attain a deeper knowledge and set of skills for the trade. Likewise, the students will have more experience, either through employment or education, and will be able to handle more difficult material.

Along with abilities and experience, pay attention to personality factors when you determine the instructional difficulty level that is appropriate for an apprentice. Apprentices who are weak in self-confidence may be intimidated by difficult material. By lowering the difficulty of instruction for such students, you help them to proceed and as a result build confidence. You can then raise difficulty as trainees become more confident. Take into account the trainees' motivation. More highly motivated apprentices will be suited to more difficult materials. Finally, consider the maturity of the apprentices. A more mature apprentice may have more defined career goals or be more settled in personal life. As a result the apprentice may be willing to apply himself or herself to a more difficult program of study.

Form Of Presentation

Different ways of presenting information are effective in instructing different apprentices. Which ways are best depends on a number of trainee characteristics. For example, a slower learner may perform better with extra repetition, special assignments, limited reading assignments, visual aids and concrete examples. Dependent on specific characteristics, other apprentices may learn better and retain longer through any of the following methods of presentation:

- Reading books, magazines, newspapers, trade journals;
- Using programmed materials;
- Conducting experiments;
- Listening to a lecture;
- Taking field trips;
- Watching demonstrations;

Once an assessment is completed, individualizing instruction is essentially a four-step process. First, you must determine where the greatest differences among apprentices exist. Based on this, you next select the method of individualization, such as varying pace or content. Then, decide which approach—for example, independent learning, using volunteers, or learning modules—will be most appropriate and effective for individualizing instruction. Finally, incorporate learning activities into the individual apprentice plans and provide instruction accordingly.

Step 1: Determine Range of Apprentice Differences

For each characteristic which you assessed, look for a range of differences among your apprentices. The range includes (a) those characteristics where there are substantial differences and (b) the extent of those differences. For example, in reading achievement the lowest apprentice may be at an 8th grade level and the highest at the level of a college junior. Job experience may range from no experience in his or her first job to someone with ten years of experience who is undergoing a career change.

Step 2: Select One Or More Ways Of Varying Instruction

Selection of an appropriate mode of varying instruction is based on the characteristics you identified in Step 1, as well as some other instructional considerations that you should take into account. As described earlier, some methods of varying instruction are more effective than others in accommodating particular individual differences. These are summarized in Figure 9. Use this figure as a guide in selecting procedures to vary instruction. Take into account the following considerations in deciding:

- *Flexibility of program standards or objectives.* If you have defined program standards may limit your ability to modify content, difficulty or sequencing of instructional activities for individual learners.
- *Availability of instructional materials.* Depending on approach required to vary instruction, availability of instructional materials and media may limit

relationship to other instructional activities. The interrelationships in instructional content will influence your ability to vary content and difficulty of instruction.

Step 3: Select Appropriate Instructional Methods Individualizing Instruction

At this point, decide which instructional methods to use for individualizing instruction. Different methods are more or less appropriate for particular ways of varying instruction. For example, self-paced learning modules can be used to vary pace of instruction, but not for varying content. Conversely, volunteers in instruction are beneficial for varying content but not pace. Methods useful for the different means of varying instruction are presented in Figure 9. Use this, as well as the instructional constraints described in Step 2, as guides for selecting instructional methods. The methods are described below:

- **Grouping** — placing apprentices with similar characteristics in common instructional activities or groups.
- **Independent Study** — each apprentice works on his or her own to attain instructional objectives. Activities may be assigned using individual job or assignment sheets. Or, objectives and activities time lines may be jointly determined by the apprentice and instructor using learning contracts.
- **Individual Assistance** — apprentices are provided tutoring by instructor, volunteers or advanced trainees, to assist them in areas where they need individual help.
- **Learning Modules** — booklets such as this which apprentices can work through at their own pace and schedule. They may be instructor developed, or the instructor can use existing modules. A set of ten modules for apprentice related instruction is available for the following topics:

1. *A Basic Core Curriculum*

2. *Introduction to Apprenticeship*

6. *Basic Measurement*
7. *Sketching, Drawing and Blueprint Reading*
8. *Basic Physical Science*
9. *Working in Organizations*
10. *Interpersonal Skills and Communication*

Module #4 of this series describes how you can develop your own learning modules.

- **Supplementary Lessons** — apprentices have a common core of instruction but are assigned additional unique activities based on individual characteristics.
- **Using a Variety of Materials and Media** — the instructor locates through catalogs, journals, articles and word of mouth a variety of materials related to his or her subject. Appropriate materials are selected for individual apprentice needs.
- **Volunteers** — can be used in a variety of ways to individualize instruction: providing specialized instruction, tutoring, developing individualized materials, conducting job analyses, interacting with employers, assisting in monitoring trainee progress, serving as resource persons for updating instruction.

Step 4. Implement Individualized Instruction

The final step is to incorporate the selected activities into instruction. First, include activities as part of apprentices' individual related subjects instruction. This is described in the previous chapter of this manual. Finally, implement instruction as described in the individual plan.

*Specific procedures for providing instruction are discussed in Module #3, *Planning Related Subjects Instruction*; Module #4, *Presenting Information to Apprentices*; and Module #6, *Developing Individualized Instruction*.

Achievement Attention Span Job Experience Learning Rate Retention	Instruction	Grouping Independent Study · Job/Assignment Sheets · Learning Contracts Learning Modules
Achievement Educational History Job Experience and Requirements Interests	Content of Instruction	Grouping Independent Study · Job/Assignment Sheets · Learning Contracts Supplementary Lesson Using a Variety of Materials and Media Volunteers
Abilities Achievement Job Experience and Requirements Personality	Instructional Level of Difficulty	Grouping Independent Study · Job/Assignment Sheets · Learning Contracts Supplementary Lesson Using a Variety of Materials and Media
Abilities Achievement Educational History Interests Job Experience Learning Characteristics Medical History Personality Special Needs Work Habits	Form of Presentation	Grouping Independent Study · Job/Assignment Sheets · Learning Contracts Using a Variety of Materials and Media Volunteers

first-year apprentices in three trades: automotive mechanic, industrial welder and industrial machine re-
 ver. After reviewing the assessment information he
 ectioned, Mr. Richards noted the following differences
 on his nine automotive mechanic apprentices:

- Prior achievement in science varied from no ex-
 posure to related science topics to completion of
 high school physics and chemistry (non-applied).
- Records indicated that the apprentices differed con-
 siderably in how quickly they mastered material.
- Two apprentices indicated that they preferred learn-
 ing by doing.

Mr. Richards looked at the information in Figure 9 to make
 instructional decisions. Looking at the first two
 columns, he decided that he could vary the content and
 pace of the instruction to account for differences in prior
 achievement and learning rate. He then looked at the third
 column to select instructional methods. Since a variety of
 learning materials were available for the automotive trade,
 he decided to select from among these materials to
 provide for variety in content. He then decided to make
 learning agreements or learning contracts with the individual
 apprentices, so they could complete their assignments at
 the pace which best suited their abilities. For two of the
 apprentices, the learning contracts contained a large
 amount of project work. Richards incorporated activities
 into the apprentice plans and determined individual
 responsibilities and dates for completion. In a similar
 fashion, Mr. Richards applied principles of individual
 differences to the planning of instruction for his ap-
 prentices in the other two trades.

Additional Information

For additional information on applying principles of
 individual differences to instruction, you could consult the
 following sources:

- Gronlund. *Individualizing Classroom Instruction*.

or on separate work paper. Compare your results
 with those provided in the appendix of the book.

1. List three ways of varying instruction to account for individual needs. What individual differences does each of these approaches account for? List at least one for each approach.

1. _____
2. _____
3. _____

2. In your related subjects instruction environment, what instructional methods would be feasible to apply for each approach you listed above?

1. _____
2. _____
3. _____

3. Using assessment information you collected in Exercise 3 in Chapter 2, go through the process of applying principles of individual differences to related instruction. Determine the range and the nature of differences among the apprentices. Select appropriate ways of varying instruction and instructional methods which you could implement in your classroom. Think about how you might incorporate these into your instruction, either through group or individual planning.

Answers to Self-Test Exercises

ILL: Determine Needs, Interests And Abilities Of Each Apprentice

See the section "Why Assess?" in Chapter 2 to check your answers.

(a.) 1, 3; (b.) 1, 2, 3, 4; (c.) 3, 4; (d.) 1; (e.) 1, 4; (f) 1, 3.

If you answered differently from the answers listed, try to think of how you would obtain the specific information using the strategy you listed. If you can justify your answer, you are right; answers above are the most common but not only methods of collecting required information.

ILL: Develop Individual Apprentice Related Instruction Plans

d

- Related instruction objectives, standards and job requirements
- Apprentice's present level of performance
- Individual or group performance objectives
- Instructional activities
- Schedules for completion

4. SKILL: Use Principles Of Individual Differences In The Learning Process

- Approaches to varying instruction are in Column 1; individual differences in Column 2; individual differences in Column 2.
- Check your answers against the methods shown in Figure 9. Would any of the following conditions prevent you from using your suggested methods?
 - Program standards
 - Limited materials available
 - Organizational administration and existing facilities and equipment
 - Time constraints
 - Prerequisite and other instructional dependencies

If so, what alternative methods could you use?

- 2. The best way to collect assessment information is through testing.
 - 3. Developing an individual apprentice plan requires that you first conduct an assessment.
 - 4. The major purpose of individualized instruction is to maximize the benefits that individual instruction.
5. Which of the following is *not* a component of an individual related instruction plan:
- a. performance objective
 - b. schedule for activity completion
 - c. job duties and requirements
 - d. learning activities
6. List four strategies for assessing the needs of apprentices.
- a. _____
 - b. _____
 - c. _____
 - d. _____
7. List five sources of assessment information obtained through discussion.
- a. _____
 - b. _____
 - c. _____
 - d. _____
 - e. _____
8. When should you assess apprentice needs?
9. Why is the first step in developing an *individual* plan to *group* apprentices?
10. List four aspects of instruction that you can vary to suit individual needs, interests and abilities.
- a. _____
 - b. _____
 - c. _____
 - d. _____
11. Which of the following is *not* a consideration in selecting procedures to vary instruction for apprentices?
- a. instructor training materials
 - b. time requirements of activities
 - c. availability of equipment and facilities
 - d. program standards and objectives

- b. Existing records
- c. Tests
- d. Discussions or Interviews
- e. Observations

(Count it correct if you listed four of the five.)

- a. Apprentice
- b. Counselor
- c. Other instructors
- d. Job supervisor
- e. Union representative

(Count it correct if you listed at least four correctly)

Assess apprentice needs as they enter related instruction and periodically throughout the duration of training.

So your plan takes advantage of those things apprentices have in common.

- a. Pace
- b. Content
- c. Difficulty
- d. Form of presentation

(Count it correct if you listed at least three correctly)

- a. Grouping
- b. Independent study
- c. Individual assistance
- d. Learning modules
- e. Supplementary lessons
- f. Using a variety of materials and media
- g. Volunteers

(Count it correct if you listed at least four of the six.)